

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***PERMIT STATEMENT OF BASIS***

TITLE V DRAFT No. V-05-005 (REVISED)

OWENSBORO GRAIN EDIBLE OILS, INC.

OWENSBORO, KY.

JUNE 22, 2007

REVIEWER, CHRIS LESLIE

PLANT I.D. # 21-059-00175

AI # 939

**SOURCE DESCRIPTION:**

Owensboro Grain Edible Oils, Inc. is a refinery which produces table oils, margarine, and other edible fats and oils.

Initial Permit – The initial permit, F-95-003, was issued to the source on August 21, 1995. The source was considered major for SO<sub>2</sub> emissions with emissions of 178.09 tons/year. These emissions were calculated assuming the plant would run fuel oil all year. The log number for this action was D305

Revision 1 – The permit was revised on February 14, 1997. The source accepted a limit on their hexane emissions of 9.5 tons/year so they may avoid Title V permitting requirements. SO<sub>2</sub> emissions were also limited to 95 tons/year. The log number for this action was E672.

Letter 1 – The source was issued a letter on March 21, 1997 for the addition of six new vegetable oil storage tanks. A determination was made that no State regulations applied to these tanks. Therefore, a No Permit Required letter was sent to the source. The log number for this action is F133.

Letter 2 – The source was issued a letter on April 7, 1997 for the addition of a nitrogen generating unit. A determination was made that no State regulations applied to these tanks. Therefore, a No Permit Required letter was sent to the source. The log number for this action is I1213.

Letter 3 – The source was issued a letter on June 5, 1997 for the addition of four new vegetable oil storage tanks. A determination was made that no State regulations applied to these tanks. Therefore, a No Permit Required letter was sent to the source. The log number for this action is I1249.

Letter 4 – The source was issued a letter on June 19, 2000 for the addition of three new vegetable oil storage tanks. A determination was made that no State regulations applied to these tanks. Therefore, a No Permit Required letter was sent to the source. The log number for this action is I1960.

Title V Revision – The permit was not revised yet. The source submitted an application on September 23, 2005, stating that they wanted to install an ice condensing vacuum system that utilizes ammonia and the process will have no emissions. This is considered an insignificant activity.

Title V Revision – The permit was not revised yet. The source submitted an application on

December 16, 2005, stating that they wanted revision of two existing terms of the permit. The first revision was that they wanted to be limited by the 157.68 tons/year of n-hexane instead of being limited by the 90,000 pounds of soybean oil per hour. In the second revision they requested permission to burn biodiesel and soybean oil as backup fuels for the boilers and keep the same limit of 2,500,000 gallons per year that was placed on the #2 fuel oil.

Title V Revision – The permit was not revised yet. The source submitted an application on August 9, 2006, stating that they wanted permission to burn glycerin as a backup fuel in addition to the soybean oil and biodiesel and also wanted the permit to be changed to allow for the handling of up to 6,000,000 gallons of biodiesel, soybean oil, or glycerin during any 12 month period.

Title V Revision – The permit was revised on March 7, 2007. The source submitted a withdrawal letter on March 7, 2007 stating that they did not want to add the biodiesel, soybean oil, and glycerin as backup fuels, at this time, because they could not find or produce the appropriate combustion emission factors or heating values for these fuels.

## COMMENTS

### Type of control and efficiency

The controls implemented at the source are considered adequate to sufficiently control emissions. The assumed efficiencies for particulate emission controls are 90% for the paved haul road and yard area, and 70% for the unpaved haul road and yard area. The bleaching clay silo is controlled by a baghouse with a control efficiency of 99%.

### Emission factors and their source

AP-42

MSDS

Manufacturer's guarantees

### Applicable regulations

401 KAR 52:020, Title V Permits, applies to the source because the source emits more than 10 tons/year of a single HAP. (n-Hexane)

The bleaching clay storage silo is subject to 401 KAR 59:010, New process operations, because construction of the silo commenced after July 2, 1975.

The paved and unpaved haul road and yard areas are subject to 401 KAR 63:010, Fugitive emissions.

The Cleaver Brooks boiler is subject to 40 CFR 60 Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating units, and 401 KAR 59:015, New indirect heat exchangers.

The two Geka boilers are subject to 401 KAR 59:015, New indirect heat exchangers.

The refining/bleaching, hydrogenation (2), deodorization (2), soap stock filter storage, and hot well are subject to 401 KAR 63:020, Potentially hazardous matter or toxic substances. The n-Hexane PRG limit is 200 micrograms per cubic meter. As specified in the permit, the owner or operator

must demonstrate through modeling that the capture efficiency at the hot well will be at least 12% continuously. This will allow the source to be below the PRG limit for Hexane.

#### **EMISSION AND OPERATING CAPS DESCRIPTION:**

The bleaching clay silo is limited by 401 KAR 59:010, New process operations, applicable on or after July 2, 1975. Opacity and mass emission limits result from the application of this regulation. As a result, the bleaching clay silo will be required to use a filter and be operated and maintained in accordance with the manufacturer's recommendations.

The paved and unpaved haul road and yard areas are subject to the requirements of 401 KAR 63:010, Fugitive emissions. These emission points will be controlled by utilizing wet suppression, enclosures, and/or dust collection equipment so as to keep particulate emissions from crossing the lot line of the property.

The source has been limited to not emitting more than 157.68 tons per year of n-hexane. Hourly records to demonstrate compliance with this limitation shall be maintained on an hourly basis. There are also emission limitations required by 40 CFR 60, Subpart Dc and 401 KAR 59:015, as outlined below.

40 CFR 60, Subpart Dc limits the source to using # 2 fuel oil that contains no more than 0.5 weight percent sulfur. This can be demonstrated through fuel supplier certification. 401 KAR 59:015 limits the source to a particulate emission rate of no more than 0.34 lbs/mmBtu and an opacity of no more than 20% except for the listed exceptions. Compliance with these limits can be demonstrated by calculations and a Method 9 determination, respectively.

The three boilers, the Cleaver Brooks and the two Geka Boilers, are limited to burning a total of 2,500,000 gallons of fuel oil per year. This number comes from the application filed by the source on form DEP 7007J. The two storage tanks have a limit of 1,250,000 gallons per year, each. In a letter dated July 10, 2003, the source requested a limit of 2,641,000 gallons per year. The limit of 2,641,000 gallons per year was listed in the previous permit. The limit was left at 2,500,000 gallons per year based on information in the application.

401 KAR 63:020 limits the refining/bleaching, hydrogenation (2), deodorization (2), soap stock filter storage, and hot well to emitting potentially hazardous matter or toxic substances in such quantities or duration as to not be harmful to the health and welfare of humans, animals and plants. The PRG limit for n-Hexane is 200 micrograms per cubic meter. Assuming 100% of the n-Hexane is emitted and a capture efficiency at the hot well of 12%, the n-Hexane ambient concentration at or beyond the fence line is 198.056 micrograms per cubic meter. Therefore, the source is required to maintain a capture efficiency of at least 12% at the hot well.

#### **PERIODIC MONITORING:**

Given the control device used (filter) at the bleaching clay storage silo, there is little chance of violating a mass or opacity standard. For this reason, direct measurement of mass and opacity emissions will not be required but some assurance that the filters are working properly will be needed. Visual inspection of the filters, proper maintenance, and records of maintenance and the dates this maintenance occurred are sufficient to assure the filters are working properly.

Only record keeping is required to demonstrate compliance with the applicable limitations in the permit.

**OPERATIONAL FLEXIBILITY:**

The source has been limited to burning no more than 2,500,000 gallons of # 2 fuel oil per year. Monthly records to demonstrate compliance with the fuel oil limitation shall be maintained monthly and on a 12 month rolling total.

**CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.

**B. PUBLIC AND U.S. EPA REVIEW:**

Public notice was placed in the Messenger-Inquirer on February 2, 2005. The comment period ended on March 3, 2005. There were no comments from public. Comments were received from the company. Attachment A to this document lists the comments received and the Division's response to comments. Please see Attachment A for an explanation of the changes made to the permit. The proposed permit will be sent to U.S. EPA review and the comment period will end 45 days after the receipt.

## **ATTACHMENT A**

### **COMMENTS FROM OWENSBORO GRAIN EDIBLE OILS LLC (OGEO) AND DIVISION'S RESPONSE TO COMMENTS**

#### **General Comments**

1. Since the Title V permit application was submitted in September 1998, the Company has been reorganized as a limited liability corporation. We request a change to reflect the correct name as "Owensboro Grain Edible Oils LLC". Mailing information remains unchanged.

#### **Division's Response:**

The Division concurs with the permittee.

2. The Draft Permit refers only to soybean oil. The refinery is capable of refining a variety of edible oils, and we request this capability be recognized by changing references of soybean oil to "edible oil" or "vegetable oil."

#### **Division's Response:**

The Division concurs with the permittee.

3. The facility's Title V application included a small gasoline tank as an insignificant activity (form DEP7007DD). This tank was omitted from Section C – Insignificant Activities in the draft permit. OGEO requests that the gasoline tank be included as an insignificant activity.

#### **Division's Response:**

The Division concurs with the permittee.

4. The Company requests clarification in the permit to indicate that n-Hexane is the "hazardous air pollutant" (HAP) which is being regulated. Potential HAP emissions greater than 10 tons is the reason a Title V application was submitted. Please clarify that references to hexane in the draft permit are actually intended to mean the n-Hexane portion (approximately 64 percent) of commercial hexane. Therefore, any emission limit in the permit should refer to n-Hexane.

#### **Division's Response:**

The Division concurs with the permittee.

## **General Comments (Continued)**

5. The Company wants to clarify that the n-hexane emissions from the production of oil at the Owensboro Grain crushing plant have always been, and will continue to be assigned to the crushing plant. The n-hexane disappearance number (reported as emissions monthly) from the crushing plant includes residual n-hexane left in the unrefined oils sent for further processing, such as to the edible oil refinery. OGEO requests clarification that the n-hexane and VOC emissions limit placed on the refinery is related to the refining of oils bought from other suppliers (outside oil). Consequently, the calculation of annual emissions on n-Hexane and the monthly production rate used in the calculation will only be required for the outside oils purchased.

### **Division's Response:**

The Division disagrees with the permittee. The source has admitted if they could not receive oil from their crushing plant, they would purchase enough "outside" oil to replace the oil lost from the crushing plant. Therefore, there is a potential for the source to refine 100% "outside" oil. Because of this potential, they need to keep records on all oil refined at the source and assume that 100% of the raw oil refined has the potential for n-Hexane emissions.

6. The bleaching clay storage silo (EP 02 (2)) is located on the plant roof and functions to feed bleaching clay by gravity through an air lock into the plant, creating negative pressure inside the silo. The baghouse on the clay silo is designed for operation only during the unloading of trucks into the silo (a few hours each month) and is not essential to comply with applicable regulations (the source emits minimal particulate emissions). The baghouse is located on top of the clay storage silo and is not routinely accessed due to safety considerations. OGEO requests the baghouse be removed as an enforceable permitted device. Alternately, use of the baghouse should only be required during truck unloading.

### **Division's Response:**

The Division concurs in part with the permittee. The baghouse should only be required to be in operation during each truck unloading. The permit will be conditioned to require operation of the baghouse during all hours of truck unloading and also require recording the opacity and static pressure once during each truck unloading.

7. The Company would like the permit to accommodate new cleaner fuel technology which could be used in the facility's boilers. A blend, containing up to 20 per cent vegetable oil, would allow the facility additional flexibility to burn up to 3,200,000 gallons of Bio-diesel without adding to particulate matter or sulfur dioxide emissions. OGEO requests the permit recognize Bio-diesel as an alternate fuel.

### **Division's Response:**

The Division disagrees and would suggest the source submit a revision application to add Bio-diesel as an alternate fuel to their Title V permit.

## **Specific Comments**

Page 3 of 24, Specific Monitoring Requirements

Page 3 of 24, Specific Recordkeeping Requirements

Page 3 of 24, Specific Control Equipment Operating Conditions

**Comment:** The Maximum Rated Capacity of 25 tons/hour refers to the filling rate for the Bleaching Clay Storage Silo. The Silo is filled from trucks, less than once per week. Clay is subsequently gravity fed from the silo to plant equipment, creating negative pressure in the silo. The baghouse is operated only during truck unloading and is not essential to comply with applicable regulations.

**Recommendation:** Delete the entire sections.

### **Division's Response:**

The Division concurs in part with the permittee. Also see the Division's Response in Item 6 above.

Page 7 of 24, Applicable Regulations

**Comment:** 401 KAR 60:005, incorporating by reference 40 CFR Subpart Kb, no longer applies to these emission units. 68 FR 59328, October 15, 2003, exempts those sources formerly subject to recordkeeping requirements only from Subpart Kb.

**Recommendation:** Delete the entire sentence.

### **Division's Response:**

The Division concurs with the permittee.

Page 7 of 24, Specific Recordkeeping Requirements

**Comment:** See Above.

**Recommendation:** Delete this recordkeeping requirement.

### **Division's Response:**

The Division concurs with the permittee.

Page 12 of 24, Operating Limitations 1.b

Page 12 of 24, Emissions Limitations

Page 13 of 24, Testing Requirements

Page 13 of 24, Specific Monitoring Requirements

Page 13 of 24, Specific Recordkeeping Requirements

Page 13 of 24, Specific Reporting Requirements

**Comment:** This comment refers to the limit of 12 percent capture efficiency for n-hexane at the “hot well” vent (Operating Limitations and Emissions Limitations) and the requirement to submit a proposed capture efficiency test protocol (Testing Requirements). The Permit Statement of Basis cites regulation 401 KAR 63:020 as the applicable regulation, with a modeled impact of 198.056 ug/m<sup>3</sup> at or beyond the fence line at a hot well capture efficiency of 12%. This capture efficiency was cited for the site to demonstrate compliance with the PRG limit for n-Hexane of 200 ug/m<sup>3</sup>.

The development of a capture efficiency protocol for demonstration of compliance with a minimum 12 percent capture requirement is potentially problematic for this facility, since no promulgated capture efficiency methods have been developed for this type of emissions scenario. The capture efficiency methodology employed in the EPA Method 204 series apply primarily to surface coating and printing operations, where emissions from a process line are captured and controlled via a control device. Given that the capture efficiency assigned to the hot well by DAQ of 12% represents a very low capture efficiency, there exists a strong possibility that refined modeling may demonstrate compliance with the PRG for n-Hexane with zero capture, thereby eliminating the need for arbitrary determination of capture efficiency.

Therefore, OGEO would like to propose alternate language that would allow the facility to conduct its own dispersion modeling of n-Hexane impacts at or beyond the fenceline. The results of this modeling, which will be submitted to DAQ for review, will show whether any capture efficiency is necessary to demonstrate compliance with the n-hexane PRG.

**Recommendation:**

Page 12 of 24, Operating Limitations 1.b – Change language to read:

- b. The level of capture efficiency for n-Hexane at the hot well vent shall be maintained at a level determined by dispersion modeling, unless modeling demonstrates compliance with 401 KAR 63:020 can be attained with zero percent capture.

Page 12 of 24, Emissions Limitations, Compliance Demonstration Method – Change Language to read:

- c. The hot well is deemed in compliance when capture at or above the minimum level determined by dispersion modeling, unless the modeling demonstrates compliance with 401 KAR 63:020 can be attained with zero percent capture.

**Recommendation: (Continued)**

Page 13 of 24, Testing Requirements – Delete current language, replace with the following:

- a. The source shall perform a one-time modeling within six months of the issuance of the Title V permit to demonstrate compliance with the PRG limit for n-Hexane. The modeling guidelines in 40 CFR 51, Appendix W shall be followed for setting up the modeling parameters and the model.
- b. Should the modeling demonstrate compliance with the PRG limit for n-Hexane at a hot well capture efficiency of zero percents, the site will be deemed in compliance with 401 KAR 63:020.
- c. Should the modeling demonstrate that compliance with the PRG limit for n-Hexane must be attained by achieving a capture efficiency greater than zero at the hot well, the facility shall determine the minimum percent capture for compliance with the PRG limit based upon the modeling results.
- d. If the modeling demonstrates that compliance with the PRG limit must be maintained by assigning a hot well capture efficiency greater than zero, the facility shall, within 60 days of approval of the dispersion modeling results by the Division, submit a proposed testing protocol to determine the level of emissions captured at the hot well. The protocol shall include the appropriate method, description of the method, and parameters used in the method. If required, the permittee shall conduct a performance test on the hot well vent no later than 180 days after approval of the dispersion modeling results by the Division.

Page 13 of 24, Specific Monitoring Requirements – Change language to read:

The source shall monitor and record the n-Hexane content of unrefined vegetable oils purchased from outside suppliers. The source shall also calculate the annual emissions of n-Hexane in tons, for outside vegetable oils processed (twelve month rolling total).

Page 13 of 24, Specific Recordkeeping Requirements – Change language to read:

The source shall keep a log of the monthly production rate of outside purchased vegetable oils and use this to calculate the twelve month rolling total.

Page 13 of 24, Specific Reporting Requirements – Change language to read:

The source shall submit the monthly n-Hexane emissions from outside vegetable oils and use this to calculate the twelve month rolling total. The monthly n-Hexane emission reports shall be submitted with the source's semi-annual report.

**Division's Response:**

The Division disagrees with the source. The permit will be issued as conditioned. If the source wishes to conduct refined modeling after the permit is issued, the results may be submitted as a revision to the permit. Also see the Division's Response in Item 5 above.

Page 14 of 24, SECTION C – INSIGNIFICANT ACTIVITIES

**Comment:** See Item 3 above.

**Recommendation:** Add language to read:

	<u>Description</u>	<u>Generally Applicable Regulation</u>
4.	Gasoline Storage Tank (550 gallons)	401 KAR 63:020

**Division's Response:**

The Division concurs. Also see the Division's Response in Item 3 above.